ABSTRACT

The present invention discloses an nF-opening-based mask-programmable read-only memory. Because its openings can be nx ($n>1$) wider than its address-selection lines, this memory can use less expensive opening mask. Other mask-programmable 3-D memory (3D-M) structures are also disclosed. The present invention makes further improvements to the 3D-M's peripheral circuits. Full-read mode and self-timing can be used to improve the speed and reduce the power consumption.